



IEEE Metaverse Initiative (IEEE Future Directions)

Co-Chairs: Stephen Dukes, Cecilia Metra, Jeewika Ranaweera
Program Director: Sin-Kuen Hawkins

IEEE Region 8 Meeting, Wien, March 2nd, 2024

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Metaverse



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The IEEE Metaverse Initiative: Steering Committee

- ❑ Cecilia Metra, *Initiative Co-Chair*, Univ. of Bologna (Italy), IEEE Director-Elect - Division VIII, IEEE Computer Society President 2019
- ❑ Jeewika Ranaweera, *Initiative Co-Chair*, IEEE Future Directions Past Vice-Chair
- ❑ Steve Dukes, *Initiative Co-Chair*, Imaginary Universes, LLC
- ❑ Jyotika Athavale, NVIDIA, President IEEE Computer Society 2024
- ❑ Edward Au, TAB Committee on Standards
- ❑ Nathaniel Bridges, Air Force Research Laboratory
- ❑ Peter Corcoran, *Professor*, University of Galway
- ❑ Derrick de Kerckhove, *Journalist*, Media Duemila
- ❑ Abdulmotaleb El Saddik, University of Ottawa
- ❑ Nelson Fonseca, *Professor*, State University of Campinas
- ❑ Mar Gonzalez-Franco, *Research Scientist*, Google
- ❑ Okyay Kaynak, Bogazici University
- ❑ Nikolai Leung, *Senior Director*, Qualcomm
- ❑ Riccardo Locatelli, *Functional Safety Architect*, Intel Corporation
- ❑ Fabrizio Lombardi, *Professor*, Northeastern Univ, Past-President IEEE Nanotechnology Council
- ❑ Gian Mario Maggio, *Managing Director*, EIT Manufacturing South S.R.L
- ❑ Riccardo Mariani, *Vice-President Industry Safety*, NVIDIA
- ❑ Stefan Mozar, *CEO*, Dynexsys Pty Ltd
- ❑ Nick Napp, *Co-Founder*, Xmark Labs, LLC
- ❑ Louis Nisiotis, *Lecturer*, University of Central Lancashire, Cyprus
- ❑ Sandy Ressler, *Information Visualization Researcher*, NIST
- ❑ May Dongmei Wang, *Professor*, Georgia Institute of Technology, Emory University
- ❑ Yervant Zorian, *Chief Architect and Fellow*, Synopsys

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The Metaverse

- ❑ As known, **the Metaverse** can be defined as a **new layer** bridging the gap between the digital world and the real one.
- ❑ Today's **we have tools** enabling a very accurate **digital emulation** of the real world (*e.g.*, for product design), or an **augmented reality** experience (*e.g.*, for education), or **natural language interaction with a virtual assistant** (*e.g.*, for work support), or the creation of a coupled **digital twin** of a real entity (*e.g.*, for predictive maintenance), or to provide financial services using **blockchain technology**, etc.
- ❑ The **Metaverse** should **include and connect** all these already existing, but still separated capabilities, into a **unified environment** consisting of **interoperable digital and real worlds**, with inclusive **accessibility to all.**

Why an IEEE Initiative on the Metaverse?

- ❑ Enable **the IEEE to become the thought leader** for the metaverse **evolution and adoption** by:
 - Projecting **our** (*i.e.*, the IEEE) **vision of the metaverse to influence** the future metaverse, and identify **key technical challenges and risks** towards that vision
 - ➔ *Vision/roadmap paper defining our vision, and identifying technical challenges and risks + Newsletters*
 - **Foster collaboration within the IEEE and outside the IEEE** to address such challenges and risks
 - ➔ *Initiate a new IEEE Symposium on Emerging Metaverse, with wide participation from IEEE constituencies, industries, etc*

IEEE Int'l Symposium on Emerging Metaverse



21 October 2024 • Bellevue, WA, USA

IEEE International Symposium
on Emerging Metaverse:

Navigating the Virtual Frontier

**Co-located with the IEEE International Symposium
on Mixed and Augmented Reality (ISMAR)*

- ❑ All day event with **invited speakers, panels, technical papers**
- ❑ Focused on **interactions:**
 - among **IEEE constituencies**, and
 - with **industries**, and
 - **outside organizations**on metaverse **technological challenges and risks**, and **industrial applications**.



The IEEE Metaverse Initiative

- An **IEEE enabler for collaboration** among **IEEE constituencies** (Societies, Councils, Regions, Boards, etc) on metaverse's challenges and risks
- IEEE constituencies **who already agreed to support the initiative** (more will hopefully be added):



If you are interested, please join us by clicking on:
“Stay connected with the IEEE Metaverse Initiative” at

<https://metaversereality.ieee.org/about>





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IEEE Metaverse Initiative: Mission Statement

- **Mission Statement:** Our mission is to **promote** the seamless **integration of the digital and physical worlds** through the Metaverse, **unlocking new opportunities for individuals and industries** in their academic, personal, professional, and social lives. We are committed to achieving this by establishing standards, **fostering collaboration**, and promoting open data with the ultimate goal of overcoming economic, ethical, and technological challenges. Our vision is **to create an accessible, inclusive, and transformative Metaverse** that empowers people from all walks of life to connect, learn, and thrive.



metaversereality.ieee.org



2024 Program Plan and Activities - Publications

❑ Metaverse Publications

➤ Vision/Roadmap Paper (to be published)

- Define our vision of the Metaverse
- Identify challenges and risks

➤ Periodical Newsletters to include

- Information on our upcoming activities in the field
- Reference to relevant, recent articles with original content

➤ Paper submission to IEEE Publications

- Journal of Biomedical and Health Informatics
- Others to be identified

2024 Program Plan and Activities - Standards

- ❑ Monitor and identify **metaverse standardization opportunities**
- ❑ **Influence the direction** in metaverse standards under developments (not only within the IEEE)
- ❑ Develop a resource to **map/summarize the complex metaverse standards landscape**